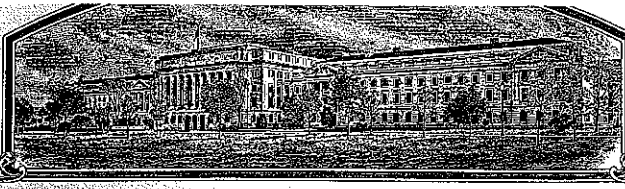


No.

200100280



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

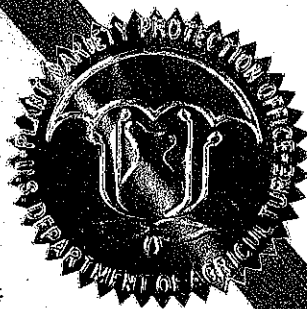
NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'25R78'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this eighteenth day of April, in the year two thousand two.

Attest:



Blm jhc

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Greenman

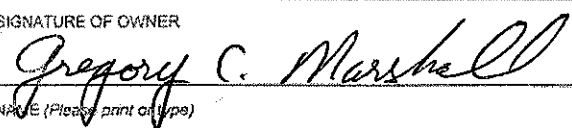
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Pioneer Hi-Bred International, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME		3. VARIETY NAME 25R78	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Crop Genetics Research & Development Wheat Research 3850 N. 100 E. Windfall, IN 46076-9389		5. TELEPHONE (Include area code) (765) 945-7906		FOR OFFICIAL USE ONLY	
		6. FAX (include area code) (765) 945-8313		PVPO NUMBER 200100280	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Iowa		9. DATE OF INCORPORATION May 1926	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) Dr. Gregory C. Marshall Pioneer Hi-Bred International, Inc. Wheat Research 3850 N. 100 E. Windfall, IN 46076-9389				FILING AND EXAMINATION FEES: \$ 2705.00 DATE 9/12/01 CERTIFICATION FEE: \$ 320.00 DATE 3/28/02	
11. TELEPHONE (Include area code) (765) 945-7906		12. FAX (Include area code) (765) 945-8313		13. E-MAIL Greg.Marshall@Pioneer.com	
14. CROP KIND (Common Name) Wheat		15. GENUS AND SPECIES NAME OF CROP Triticum aestivum		16. FAMILY NAME (Botanical) gramineae	
17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no", go to item 22)		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED			
21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? IF YES, SPECIFY THE <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED NUMBER 1,2,3, etc. (If additional explanation is necessary, please use the space indicated on the reverse.)		22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)			
23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)		24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER 		SIGNATURE OF OWNER			
NAME (Please print or type) Gregory C. Marshall		NAME (Please print or type)			
CAPACITY OR TITLE Coordinator of Wheat Research		DATE 9/5/01		CAPACITY OR TITLE	
				DATE	

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,705 (\$320 filing fee and \$2,385 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center--East, Beltsville, MD 20705. Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed/lsg-sd.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

S&T-470 (04-01) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (02-99) which is obsolete.

18A. Exhibit A. Origin and Breeding History of Pioneer Wheat Cultivar 25R78.

Pioneer® cultivar '25R78', a soft red winter wheat (*Triticum aestivum* L.) was developed by Pioneer Hi-Bred Int'l., Inc.. Using a modified pedigree selection breeding method, 25R78 was derived from the cross:

Pioneer line WEE111A2/2510 sib//2571

WEE111A2 was an experimental line derived from the cross: Pioneer line W0005B/Pioneer line W0026//Pioneer line W9032B. Pioneer line WEE111A2 was derived from the cross: Stella/2555 sib//3*2555. Stella is a soft red winter wheat germplasm line released by Purdue University and contains the H9,H10 genes for Hessian fly resistance. 2510 sib is an F₃ sister to Pioneer cultivar 2510. The detailed parentage of 25R78 is:

Stella/2555 sib//3*2555/2510 sib/3/2571

The single cross WEE111A2/2510 sib was made in the 1989 spring greenhouse cycle and was designated WBK1682. During the 1989 fall greenhouse cycle the F₁, WBK1682, was crossed with 2571 and the final cross designated WBL0708. The subsequent breeding history of 25R78 is described below.

<u>Year</u>	<u>Generation</u>	
1989	Final cross	
1990	F ₁	F ₁ grown in transplant nursery at Windfall IN.
1990-91	F ₂	Bulk populations grown at Windfall and Ft. Branch, IN. Individual spike selections made at Windfall, IN.
1991-92	F ₃	Headrows from F ₂ selections grown at Ft. Branch, IN and Windfall, IN. Selected rows cut and threshed individually.
1992-93	F ₄	A 3 row X 3-meter observation plot was planted at Windfall and Ft. Branch, IN. A meter section of the center row was harvested from each selected plot and threshed in bulk.
1993-94	F ₅	Seed from selected F ₄ plots was screened for resistance to Hessian fly Biotype L at Purdue University and putative resistant plants transplanted to the field at Windfall, IN.
1994-95	F ₆	Seed from putative Hessian fly Biotype L resistant plants was planted at Windfall and Ft. Branch, IN. Selected rows were cut and threshed individually.
1995-96	F ₇	Preliminary yield testing of an F ₅ selection from an F ₆ headrow. This selection designated WBL0708A2.

1996-97	F ₈	Advanced yield testing of WBL0708A2. 200 individual spikes were harvested from a small bulk increase.
1997-98	F ₉	Elite yield testing of WBL0708A2. 200 purification headrows planted, offtype rows destroyed prior to maturity, 102 of the remaining rows were individually cut and threshed. Two spikes were taken from each harvested row.
1998-99	F ₁₀	Elite yield testing continues of WBL00708A2. Seed from purification headrows planted in individual progeny plots which surround 200 headrows. Offtype plots and headrows destroyed prior to harvest. Equal number of spikes harvested from remaining progeny plots for a total of 1000 spikes. Progeny plots harvested in bulk which constitutes Breeder Seed. Bulk seed, headrow bulks, and spikes turned over to Pioneer's Parent Wheat Seed Group.
1999-2000	F ₁₁	Elite yield testing continues, line now designated YW599. Seed increase continues by Pioneer Parent Wheat Seed Group.
2000-01	F ₁₂	Elite yield testing continues, line designation now XW599. Seed increase continues by Pioneer Parent Wheat Seed Group.

Decision to release WBL0708A2 was made in August, 2001 at which time the commercial code, 25R78 was assigned.

The cultivar 25R78 was bred and selected for any and all of the following characteristics in the field environment: disease resistance, plant type, plant height, head type, straw strength, maturity, grain yield, test weight, and milling and baking characteristics.

25R78 has been shown to be uniform and stable since the 7th generation, or for the last 5 generations. Variants are limited to slightly taller plants or awnless plants at a frequency no greater than 1/15,000 in total.

Revised December 2001

18 B. Exhibit B. Statement of Distinctness

25R78 is most similar to Pioneer variety 2540 but with the following distinguishing characteristics:

1. The coleoptile color of 25R78 is white while that of 2540 is purple.
2. The glume beak length of 25R78 is short while that of 2540 is long.
3. The reaction of 25R78 to leaf rust (*Puccinia triticinia*) is highly resistant while that of 2540 is moderately susceptible. See below table.

Leaf rust ratings:

	YEAR			
	1998	1999	2000	Total
25R78	7.8	8.5	7.8	8.0
2540	4.3	5.2	4.6	4.7

# Locations	2	3	4	9
# Replications	3	5	9	17
Probability	0.09	0.017	0.008	0.000

Scale of 1 – 9 where 9 = excellent or resistant, 1 = poor or susceptible.

Data collected at locations of Ridgeway, IL; Westport, IN; and Windfall, IN (early and late plantings).

Probability is the significance level of the difference between the two values.

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved - OMB No. 0581-0055

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 2.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S) Pioneer Hi-Bred International, Inc.	FOR OFFICIAL USE ONLY
ADDRESS (Street and No., or RD No., City, State, and Zip Code) Crop Genetics Research & Development Wheat Research 3850 N. 100 E. Windfall, IN 46076-9389	PVPO NUMBER 200100280
	VARIETY NAME 25R78
	TEMPORARY OR EXPERIMENTAL DESIGNATION

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in the first box (e.g. or) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: **Munsell Color Charts for Plant Tissues**

Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

1=Common

2=Durum

3=Club

4=Other (SPECIFY):

2. VERNALIZATION:

1=Spring

2=Winter

3=Other (SPECIFY):

3. COLEOPTILE ANTHOCYANIN:

1=Absent

2=Present

4. JUVENILE PLANT GROWTH:

1=Prostrate

2=Semi-erect

3=Erect

5. PLANT COLOR (boot stage):

1 = Yellow-Green

2 = Green

3 = Blue-Green

6. FLAG LEAF (boot stage):

1 = Erect

2 = Recurved

1 = Not Twisted

2 = Twisted

7. EAR EMERGENCE:

Number of Days Earlier Than 2540

*

Number of Days Later Than

*

8. ANTHOR COLOR:

☐ 1

1 = Yellow

2 = Purple

9. PLANT HEIGHT (from soil to top of head, excluding awns):

☐ ☐

cm Taller Than _____ *

☐ 4

cm Shorter Than 2540 _____ *

* Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

10. STEM:

A. ANTHOCYANIN

☐ 1

1 = Absent

2 = Present

D. INTERNODE (SPECIFY NUMBER)

☐ 1

1 = Hollow

2 = Semi-solid

3 = Solid

B. WAXY BLOOM

☐ 1

1 = Absent

2 = Present

E. PEDUNCLE

☐ 2

1 = Absent

2 = Present

C. HAIRINESS (last internode of rachis)

☐ 2

1 = Absent

2 = Present

☐ 32

cm Length

11. HEAD (at Maturity):

A. DENSITY

☐ 21 = Lax
3 = Dense

2 = Middense

C. CURVATURE

☐ 3

1 = Erect

2 = Inclined

3 = Recurved

B. SHAPE

☐ 21 = Tapering
3 = Clavate

2 = Strap

4 = Other (SPECIFY): _____

D. AWNEDNESS

☐ 4

1 = Awnless

2 = Apically Awnletted

3 = Awnletted

4 = Awned

12. GLUMES (at Maturity):

A. COLOR

☐ 2

1 = White

2 = Tan

3 = Other (SPECIFY) : _____

C. BEAK

☐ 3

1 = Obtuse

2 = Acute

3 = Acuminate

B. SHOULDER

☐ 3

1 = Wanting

2 = Oblique

3 = Rounded

4 = Square

5 = Elevated

6 = Apiculate

D. LENGTH

☐ 2

1 = Short

2 = Medium

(ca. 7mm)

(ca. 8mm)

3 = Long (ca. 9mm)

12. GLUMES (at Maturity) *Continued*:

E. WIDTH

- ☐ 2 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm)
3 = Wide (ca. 4mm)

13. SEED:

A. SHAPE

- ☐ 2 1 = Ovate 2 = Oval 3 = Elliptical

C. BRUSH

- ☐ 1 1 = Short 2 = Medium 3 = Long

- ☐ 1 1 = Not Collared 2 = Collared

B. CHEEK

- ☐ 1 1 = Rounded 2 = Angular

D. CREASE

- ☐ 1 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

- ☐ 2 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

E. Color

- ☐ 3 1 = White 2 = Amber 3 = Red
4 = OTHER (Specify)

G. PHENOL REACTION (*see instructions*):

- ☐ 3 1 = Ivory 2 = Fawn
3 = Light Brown 4 = Dark Brown
5 = Black

F. TEXTURE

- ☐ 2 1 = Hard 2 = Soft

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

☐ 0 Stem Rust (*Puccinia graminis* f. sp. *tritici*)

☐ 2 Leaf Rust (*Puccinia recondita* f. sp. *tritici*)
Field races

☐ 0 Stripe Rust (*Puccinia striiformis*)

☐ 0 Loose Smut (*Ustilago tritici*)

☐ 3 Tan Spot (*Pyrenophora tritici-repentis*)
Field races

☐ 0 Flag Smut (*Urocystis agropyri*)

☐ 0 Halo Spot (*Selenophoma donacis*)

☐ 0 Common Bunt (*Tilletia tritici* or *T. laevis*)

☐ 3 *Septoria nodorum* (Glume Blotch)
Field races

☐ 0 Dwarf Bunt (*Tilletia controversa*)

☐ 0 *Septoria avenae* (Speckled Leaf Disease)

☐ 0 Karnal Bunt (*Tilletia indica*)

☐ 3 *Septoria tritici* (Speckled Leaf Blotch)
Field races

☐ 3 Powdery Mildew (*Erysiphe graminis* f. sp. *tritici*)
Field races

☐ 3 ~~1~~ Scab (*Fusarium* spp.)

☐ 0 "Snow Molds"

14. Disease (Continued) (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

<input type="checkbox"/> 0	"Black Point" (Kernel Smudge)	<input type="checkbox"/> 0	Common Root Rot (<i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.)
<input type="checkbox"/> 0	Barley Yellow Dwarf Virus (BYDV)	<input type="checkbox"/> 0	Rhizoctonia Root Rot (<i>Rhizoctonia solani</i>)
<input type="checkbox"/> 3	Soilborne Mosaic Virus (SBMV) Field races	<input type="checkbox"/> 0	Black Chaff (<i>Xanthomonas campestris</i> pv. <i>translucens</i>)
<input type="checkbox"/> 3	Wheat Yellow (Spindle Streak) Mosaic Virus Field races	<input type="checkbox"/> 0	Bacterial Leaf Blight (<i>Pseudomonas syringae</i> pv. <i>syringae</i>)
<input type="checkbox"/> 0	Wheat Streak Mosaic Virus (WSMV)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/>	Other (SPECIFY)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/>	Other (SPECIFY)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/>	Other (SPECIFY)	<input type="checkbox"/>	Other (SPECIFY)

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

max 1-24-2002 3

<input checked="" type="checkbox"/> 1	Hessian Fly (<i>Mayetiola destructor</i>) Biotypes E & L	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/> 0	Stem Sawfly (<i>Cephus</i> spp.)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/> 0	Cereal Leaf Beetle (<i>Oulema melanopa</i>)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/> 0	Russian Aphid (<i>Diuraphis noxia</i>)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/> 0	Greenbug (<i>Schizaphis graminum</i>)	<input type="checkbox"/>	Other (SPECIFY)
<input type="checkbox"/> 0	Aphids	<input type="checkbox"/>	Other (SPECIFY)

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS

WHEAT DESCRIPTOR ILLUSTRATIONS

Section numbers correspond to the numbers of the sections on the form.

4 EARLY PLANT GROWTH HABIT: 1 Prostrate 2 Intermediate 3 Erect	10 STEM INTERNODE X-SECTION: 1 Hollow 2 Semi-Solid 3 Solid	11 SPIKE SHAPE: 1 Tapering 2 Oblong 3 Clavate 4 Elliptical	
11 AWNEDNESS: 1 Awnless 2 Apically Awnleted 3 Awnleted 4 Awned	12 BEAK SHAPE: 1 Obtuse 2 Acute 3 Acuminate	12 SHOULDER SHAPE: 1 Wanting 2 Oblique 3 Rounded 4 Square 5 Elevated 6 Apiculate	
13 SEED SHAPE: 1 Ovate 2 Oval 3 Elliptical	13 CHEEK SHAPE: 1 Rounded 2 Angular	13 BRUSH SIZE: 1 Small 2 Midsized 3 Large 4 Collared	13 BRUSH HAIR LENGTH: 1 Short 2 Medium 3 Long
GERM (EMBRYO) SIZE: 1 Small 2 Midsized 3 Large	13 SEED CREASE WIDTH: 1 Narrow 2 Mid-Wide 3 Wide	13 SEED CREASE DEPTH: 1 Shallow 2 Mid-Deep 3 Deep	

REFERENCE

Briggle, L.W. and L.P. Reitz. 1963. Classification of Triticum Species and of Wheat Varieties Grown in the United States. Technical Bulletin 1278. United States Department of Agriculture.

Revised December 2001

18D. Exhibit D. Additional Description of the Variety

1. Yield and Agronomic information.

Preliminary yield testing of 25R78 began in the 1995-96 growing season and wide scale testing has been conducted from the 1996-97 growing season to the present. It has shown adaptation to the northern soft wheat regions based on tests conducted in Missouri, Illinois, Indiana, Ohio, and Michigan, as well as the midsouth region of Kentucky, Arkansas and the bootheel of Missouri. (Tables 1A & B).

2. Information on reaction to major diseases.

Leaf rust – Resistant to prevalent races in the northern soft wheat region.

Powdery mildew – Intermediate resistance to the prevalent isolates of powdery mildew present in the soft wheat region.

Soilborne and wheat spindle streak mosaic virus – Intermediate resistance to both viruses.

Leaf blights – Intermediate resistance to the complex of most common organisms that cause leaf blights including: *Septoria tritici* blotch, *Stagnospora nodorum* blotch, and tan spot.

Fusarium head blight – Intermediate resistance.

3. Information on reaction to major insects.

Hessian fly –although initially selected as resistant to predominant biotypes of Hessian fly, 25R78 now exhibits an intermediately resistant reaction to Biotypes L and E in tests conducted by the Dept. of Entomology, Purdue University in conjunction with USDA-ARS Insect and Weed Control Unit.

4. Information on Milling and Baking Qualities.

25R78 has demonstrated above average milling and average baking qualities (Table 2).

Table 1A. Varietal performance and agronomic characteristics from Pioneer Elite yield tests during the period 1998-2001.

Variety	Grain Yield	Test Weight	Straw Lodging	Plant Height	Heading Date	Powdery Mildew	Leaf Rust	Leaf Blight	SSMV	SBMV
	bu/ac	lb/bu	1-9 [@]	cm	Jan. 1	1-9 [@]	1-9 [@]	1-9 [@]	1-9 [@]	1-9 [@]
25R78	97.2	58.1	7	95.8	125.0	7.0	7.9	4.0	5.3	6.5
2540	89.1	56.6	5.4	99.6	129.8	7.8	4.8	4.3	7.4	6.5
25R26	90.5	55.8	5.9	96.3	129.9	6.3	8.9	3.5	7.9	7.5
25R57	89.3	56.4	6.3	101.3	126.6	7.8	6.3	4.8	4.5	3.0
lsd (P=0.05)	2.26	0.48	1	2.55	0.87	0.94	0.85	1.12	0.8	1.33
environments	91	83	15	14	14	4	10	8	12	4
years	4	4	3	4	4	1	3	2	2	3

[@] Scale of 1 - 9 where 9 = excellent or resistant, 1 = poor or susceptible.

SBMV data gathered at the University of Illinois SBMV nursery.

Data in above table gathered at Carlisle, IN, Ft. Branch, IN, Howe, IN, Westport, IN, Altamont, IL, Mascoutah, IL, Ridgway, IL, Blissfield, MI, Truxton, MO, Bucyrus, OH, Greenville, OH, and Hamler, OH.

Table 1B. Varietal performance and agronomic characteristics from Pioneer Elite yield tests during the period 1999-2001.

Variety	Grain Yield	Test Weight	Plant Height	Heading Date	Leaf Rust	Leaf Blight
	bu/ac	lb/bu	cm	Jan. 1	1-9 [@]	1-9 [@]
25R78	98.2	60.4	98.3	110.5	8.3	5.0
2552	92.8	60.5	100.6	111.9	5.3	6.5
2684	90.4	60.5	97.5	106.6	8.7	3.5
2568	91.2	58.7	100.3	111.2	7.7	4.0
lsd (P=0.05)	4.76	0.72	2.71	1.45	1.67	1
environments	32	26	19	14	3	2
years	3	3	3	3	1	1

[@] Scale of 1 - 9 where 9 = excellent or resistant, 1 = poor or susceptible.

Data in above table gathered at Ft. Branch, IN, Owensboro, KY, Fulton KY, Russellville, KY, Clarkedale, AR, Hoxie, AR, Brinkley, AR, and Sykeston, MO.

Table 2. Soft wheat quality data from the Pioneer Quality Lab in Johnston, IA 1997-2000.

Variety	Flour Yield	Break Flr Yld	Flour Protein	AWRC	Cookie Diam.	Milling Score	Bake Score
	%	%	%	%	cm	1-9 [@]	1-9 [@]
25R78	71.9	40.4	8.3	57.1	18.4	7	4
2540	70.2	38.4	8.8	55.8	19.0	5	6
25R26	71.9	38.5	8.6	56.0	18.2	6	3
25R57	70.8	38.8	8.4	53.8	19.0	6	7
# observ	7 (12-14)	7 (14-16)	7 (14-16)	7 (14-16)	7 (14-16)		

Number of observations - values in parentheses are for check varieties.

Trait abbreviations used in the above table:

AWRC = Alkaline Water Retention Capacity.

Cookie = Cookie diameter in cm.

Milling score = a score which weights flour yield 60% and break flour yield 40%.

(1 = poor, 9 = excellent)

Baking score = a rating which weights cookie spread 60% and AWRC 40%.

(1 = poor, 9 = excellent)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2420).

EXHIBIT E

STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) Pioneer Hi-Bred International, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME 25R78
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) Crop Genetics Research & Development Wheat Research 3850 N. 100 E. Windfall, IN 46076-9389	5. TELEPHONE (include area code) (765) 945-7906	6. FAX (include area code) (765) 945-8313
7. PVPO NUMBER 200100280		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain ☒ YES ☐9. Is the applicant (individual or company) a U.S. National or a U.S. based company? If no, give name of country ☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (If needed, use the reverse for extra space):

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 6 minutes per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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